

## A preliminary investigation of schematic beliefs and unusual experiences in children

Article (Accepted Version)

Noone, D, Ames, C, Hassanali, N, Browning, S, Bracegirdle, K, Corrigall, R, Laurens, K R, Hirsch, C R, Kuipers, E, Maddox, L, Fowler, D and Jolley, S (2015) A preliminary investigation of schematic beliefs and unusual experiences in children. *European Psychiatry*, 30 (5). pp. 569-575. ISSN 0924-9338

This version is available from Sussex Research Online: <http://sro.sussex.ac.uk/id/eprint/62388/>

This document is made available in accordance with publisher policies and may differ from the published version or from the version of record. If you wish to cite this item you are advised to consult the publisher's version. Please see the URL above for details on accessing the published version.

### **Copyright and reuse:**

Sussex Research Online is a digital repository of the research output of the University.

Copyright and all moral rights to the version of the paper presented here belong to the individual author(s) and/or other copyright owners. To the extent reasonable and practicable, the material made available in SRO has been checked for eligibility before being made available.

Copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way.

**AUTHOR POSTPRINT VERSION**

**PUBLISHER VERSION AVAILABLE AT:**  
<http://dx.doi.org/10.1016/j.eurpsy.2014.12.006>

## **A preliminary investigation of schematic beliefs and unusual experiences in children**

Deirdre Noone<sup>1</sup>, Catherine Ames<sup>2,3</sup>, Nedah Hassanali<sup>2</sup>, Sophie Browning<sup>3</sup>, Karen Bracegirdle<sup>3</sup>, Richard Corrigan<sup>3</sup>, Kristin R. Laurens<sup>4-7</sup>, Colette R. Hirsch<sup>2,4,8</sup>, Elizabeth Kuipers<sup>2,4</sup>, Lucy Maddox<sup>3</sup>, David Fowler<sup>9</sup>, Suzanne Jolley<sup>2\*</sup>.

<sup>1</sup>University College London, Research Department of Clinical, Educational and Health Psychology, London, UK.

<sup>2</sup>King's College London, Department of Psychology, Institute of Psychiatry, Psychology & Neuroscience, London, UK.

<sup>3</sup>South London and Maudsley NHS Foundation Trust, London, UK.

<sup>4</sup>National Institute for Health Research Mental Health Biomedical Research Centre and Dementia Unit (BRC/U) at the South London and Maudsley NHS Foundation Trust and Institute of Psychiatry, Psychology & Neuroscience, King's College London, UK.

<sup>5</sup>King's College London, Department of Forensic and Neurodevelopmental Sciences, Institute of Psychiatry, Psychology & Neuroscience, London, UK.

<sup>6</sup>Research Unit for Schizophrenia Epidemiology, School of Psychiatry, University of New South Wales, Sydney, Australia.

<sup>7</sup>Schizophrenia Research Institute, Sydney, Australia.

<sup>8</sup>University of Western Australia, Australia

<sup>9</sup>School of Psychology, University of Sussex, Falmer, UK.

\*Corresponding Author: King's College London, Department of Psychology, Institute of Psychiatry, London, SE5 8AF, UK. Telephone number: +44 20 7848 5028; Fax Number: +44 20 7848 5006; Email: [Suzanne.Jolley@kcl.ac.uk](mailto:Suzanne.Jolley@kcl.ac.uk)

Abstract: 200 words; Text: 3808 words

**Abstract** (200 words)

*Background:* In cognitive models of adult psychosis, schematic beliefs about the self and others are important vulnerability and maintaining factors, and are therefore targets for psychological interventions. Schematic beliefs have not previously been investigated in children with distressing unusual, or psychotic-like, experiences (UEDs). The aim of this study was firstly to investigate whether a measure of schematic beliefs, originally designed for adults with psychosis, was suitable for children; and secondly, to examine the association of childhood schematic beliefs with internalising and externalising problems and with UEDs.

*Method:* Sixty-seven children aged 8-14 years, with emotional and behavioural difficulties, completed measures of UEDs, internalising (depression and anxiety), and externalising (conduct and hyperactivity-inattention) problems, together with the Brief Core Schema Scales (BCSS).

*Results:* The BCSS was readily completed by participants, and scale psychometric properties were good. Children tended to view themselves and others positively. Internalising and externalising problems and UEDs were all associated with negative schematic beliefs; effect sizes were small to medium.

*Conclusions:* Schematic beliefs in young people can be measured using the BCSS, and negative schematic beliefs are associated with childhood psychopathology and with UEDs. Schematic beliefs may therefore form a useful target in psychological interventions for young people with UEDs.

**Key words:** pediatrics, child development, schizophrenia and psychosis, adolescent psychiatry, psychotherapy, cognitive behaviour therapy

Text: 3808 words

## **Introduction**

Adult schematic beliefs are strongly held, unconditional, thematic, implicit beliefs about oneself, the world and other people, formed early in life, and shaped by childhood experience

(1). As overarching cognitive structures, schemas are supposed to exert an automatic influence over cognition, emotional processing and behaviour. In adult emotional disorders, negative schemas are hypothesised vulnerability and maintaining factors (1,2). Similarly, in psychosis, negative schematic beliefs about the self (e.g. that one is worthless or unlovable) or others (e.g. being untrustworthy or judgmental) are elevated in clinical populations, and help-seeking individuals at-risk for psychosis, compared to non-clinical groups (3-14).

Associations with negative schematic beliefs are stronger for paranoid type symptoms, in contrast to grandiosity, with mixed findings for hallucinations (7,10,15-17). In psychosis, the amenability to change of negative schematic beliefs, and their association with recovery, marks them as a specific target for cognitive behavioural interventions (18-21).

In childhood, schemas are viewed as the building blocks of knowledge, providing a framework for assimilating new information, and flexibly adapting to accommodate inconsistent information, until maturity (22). Childhood schematic beliefs are less well researched than adult beliefs, but are likely to be more malleable, as they are still developing. Nevertheless, despite the developmental context, negative schematic beliefs have been linked to emotional and behavioural disorders in childhood, primarily as mediators between disrupted attachment and the development of clinical disorder (23-26). The hypothesised greater flexibility of childhood schemas may facilitate improvements following psychological

intervention: successful resilience-building cognitive therapy programmes in non-clinical but vulnerable schoolchildren have been demonstrated to change schematic beliefs (27,28).

Childhood schematic beliefs have not yet been comprehensively investigated in relation to unusual or ‘psychotic-like’ experiences. These experiences include hearing voices that others cannot hear, or feelings of being watched, followed, or having special powers, and are common in young people in the general population (29,30). Evidence suggests that the persistence of these experiences over time, and associated distress and/or negative impact, increases the likelihood of a later at-risk mental state and future mental health problems, including psychosis (31-35). Guidance from the United Kingdom National Institute for Health and Care Excellence (36) recommends that childhood unusual experiences with distress or impairment of functioning (UEDs) are treated using psychological interventions, irrespective of their prognostic significance. There is, therefore, a strong argument for developing theoretically informed and effective interventions for children presenting with these difficulties.

Recent work indicates that the cognitive, social and emotional factors implicated in the development and maintenance of psychosis in adults may contribute to the severity of childhood UEDs. Cognitive biases, emotional problems and adverse life events all show independent associations with childhood UEDs (37), but associations with the negative schematic beliefs relevant to adult psychosis have yet to be considered. Given their amenability to change, particularly in childhood while they are still developing, investigation of the association of negative schematic beliefs with UEDs in young people, is a potentially important step in the development of therapeutic approaches for these experiences.

In this study, we investigated schematic beliefs in children aged 8-14 years, who were clinically referred for emotional and/or behavioural difficulties. As our purpose was to inform the development of interventions for childhood UEDs, we chose to examine the schemas previously associated with adult psychosis. We therefore employed a psychosis-specific measure, the Brief Core Schema Scales (BCSS), which has not previously been used with children.

Our aims were twofold: firstly, to make a preliminary assessment of the suitability of the BCSS for use with children; and secondly, to start to characterise the schematic beliefs of this group of children and their association with internalising and externalising psychopathology and UEDs, paralleling studies in adult populations.

Our specific hypotheses were that negative schematic beliefs would be associated with higher levels of:

- 1) internalising problems (depression and anxiety);
- 2) externalising problems (conduct problems and hyperactivity-inattention); and
- 3) distressing unusual experiences.

We also conducted an exploratory investigation of the associations of negative schematic beliefs with different types of UEDs.

## **Methods**

### *Participants*

Participants were recruited as part of the Coping with Unusual Experiences Study (CUES, ISRCTN 13766770) from the waiting list of community Child and Adolescent Mental Health Services (CAMHS) in three South East London boroughs. The services provide interventions for children with emotional and behavioural problems, but not with a known mental health problem requiring the input of a specialist community mental health team. Participants were recruited during the first 24 months of the CUES study (July 2011 to July 2013). Parents were invited to participate by letter; if parental consent was given, young people were approached for their assent. Ethical and local approvals for the research were granted by the National Research Ethics Service (London-Hampstead Research Ethics Committee Ref 11/LO/0023) and the South London and Maudsley NHS Foundation Trust, respectively.

### *Materials*

Self-report measures were completed by the young person, on a handheld tablet computer using online survey software (SelectSurvey.NET 2.8.5), with the support of a trained researcher. The order of questionnaire administration was varied according to the judgment of the researcher, to maximize engagement. Demographic and medical information were collected from the young person's parent/guardian. Ethnicity was dichotomised according to whether or not the person self-reported a black or minority ethnic (BME) background. The British Picture Vocabulary Scale (BPVS; 38) was employed as a proxy measure of intellectual ability, appropriate for children aged 3-15 years.

### *Brief Core Schema Scales (BCSS,9)*

The BCSS is a 24-item self-report questionnaire comprising four scales measuring positive and negative beliefs about self and others (Positive Self, PS; Positive Others, PO; Negative Self, NS; Negative Others, NO). Each scale comprises six statements, for which the



participant rates their agreement (YES/NO). If endorsing a belief, respondents are asked to rate the strength of their belief from 1 (slightly) through 4 (totally). Total item scores therefore range from 0-4, and total subscale scores from 0-24. The BCSS has been used in adult populations with internal consistency ranging from 0.8 to 0.9 (9), but has yet to be used with children. For this study, we adapted the measure slightly following feedback from three focus groups (CAMHS clinicians; adolescents on an inpatient ward; and parents of adolescent inpatients). The changes were agreed by the creator of the scales (co-author DF) to be reasonable adjustments, and were: to expand the word ‘devious’ to the phrase ‘devious or liars’, as young people did not routinely understand ‘devious’ in isolation; and to re-order the items so that the measure started and finished with three positive statements.

#### *Internalising problems (depression and anxiety)*

Depression was assessed using the *Short Mood and Feelings Questionnaire (SMFQ, 39)*, a 13-item screening questionnaire for children (aged 6-17 years) with good psychometric properties. Participants rate the degree to which a symptom was experienced in the preceding two weeks on a three-point scale (0: not true; 1: sometimes true; 2: certainly true). Scores  $\geq 8$  indicate significant low mood. *The Spence Children’s Anxiety Scale (SCAS, 40)* assessed anxiety. The child self-report version of the SCAS is designed for young people from 7-19 years, and comprises 44 items, 6 of which are unscored positive filler questions. Respondents rate the degree to which a symptom is experienced on a four-point frequency scale (0: never; 1: sometimes; 2: often; and 3: always). A non-clinical mean of 24.6 (SD 15.5) has been reported for young adolescents (13-14 years), and psychometric properties are good (40).

#### *Externalising problems*

The *Strengths and Difficulties Questionnaire (SDQ, 41,42)* is a 25-item self-report psychopathology screening questionnaire, validated for young people from 11 to 16 years. It comprises five scales: emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behavior, each of five items, rated from 0 (not true) through 1 (sometimes true) to 2 (certainly true). Total scores of twenty and above indicate clinically significant difficulties. Two higher-order subscales can be calculated (42,30): internalising (emotional symptoms + peer relationship scales) and externalising (conduct problems + hyperactivity/inattention scales). Only the externalising scale was used in this study, as internalising problems were captured by the specific measures of anxiety and depression. The SDQ has good internal reliability, test-retest stability and validity (43,44).

#### *Unusual experiences questionnaire*

This 9-item self-report questionnaire is used to identify unusual (or psychotic-like) experiences in children. It has been shown to have a good internal consistency and predictive and criterion validity (30, 45,46 [using a seven-item version] in children aged 9-13 years). For this study, a severity index was calculated by expanding the original impact ratings to create a multi-dimensional rating for each item. Young people first rated their lifetime experience of each item (conviction) on a scale from 0 (not true), 1 (somewhat true), to 2 (certainly true) as in the original measure (45). The frequency, distress, and functional impairment experienced over the preceding two weeks were then rated on a four-point severity scale from 0 to 3 for each item. Items rated >0 on distress or impairment were classed as UEDs; participants were dichotomized according to whether they reported one or more UEDs or no UEDs. Dimensional ratings were summed to create item severity scores (range 0-11); items rated 0 on both distress and impairment were allocated zero ratings,

irrespective of conviction and frequency. Item scores were summed to give an overall UED severity score (range 0-99), with higher scores reflecting greater severity.

### *Analyses*

SPSS 20 (47) was used to conduct the statistical analyses. Data were occasionally missing due to participant time or attention constraints or to technical failure. Single missing items were prorated, otherwise participants with missing data were excluded from the relevant analyses (BPVS, n=2; SCAS, n=1; SMFQ and SDQ, n=1; SMFQ, n=1). One participant missed one rating of belief strength on the BCSS so their NO score was prorated. Very few of the variables were normally distributed, and therefore non-parametric (Spearman rank order correlations) or appropriately adjusted parametric analyses (Satterthwaite adjusted independent sample t-tests) were conducted. Descriptive and scale statistics (Cronbach's alpha) were used to assess the suitability and performance of the BCSS in this sample. Associations of the BCSS subscales, and other variables of interest (internalising problems (depression and anxiety, as measured by the SMFQ and the SCAS, respectively); externalising problems (conduct and hyperactivity-inattention, as measured by the externalising subscales of the SDQ); and UEDs (total severity, presence, item severity)) with demographic variables (Age, gender, IQ, Ethnicity) were assessed using non-parametric Spearman rank correlations; independent sample t-tests, with a Satterthwaite adjustment when the assumption of equality of variance was violated; and Chi-squared tests.

The tests of the main hypotheses employed non-parametric correlations, assessing the associations between schematic beliefs, and internalising problems (Hypothesis 1), externalising problems (Hypothesis 2), and UED total severity (Hypothesis 3). BCSS scores were compared between UED groups using independent sample t-tests, again, with a

Satterthwaite adjustment if required (Hypothesis 3). For the exploratory analysis of UED type, non-parametric associations between BCSS subscale scores and UED item totals were examined. Two-tailed p-values are reported throughout.

## **Results**

### *Demographic and clinical characteristics*

Sixty-seven young people (43M, 24F) aged 8-14 years were included in the current study, representing all CUES participants who completed the BCSS before July 2013 (five young people did not complete the BCSS due to constraints of time or engagement). Demographic and clinical characteristics are given in Table 1. Most participants endorsed at least one unusual experience (n=55, 82%), and three-quarters of those with unusual experiences reported associated distress or adverse life impact (n=42, 63% of the total sample).

No significant associations of BCSS subscales with IQ or ethnicity were found. Only PO was associated with age ( $Rho=0.3$ ,  $p=0.03$ ); PS showed a strong trend to differ by gender, such that girls rated themselves less positively than boys ( $t=2.0$ ,  $df=65$ ,  $p=0.052$ ). Of the internalising, externalising and UED variables, the SCAS and the UED paranoia item differed according to gender, with girls scoring higher than boys ( $t=3.1$ ,  $df=64$ ,  $p=0.003$ ;  $t=2.9$ ,  $df=35.5$ ,  $p=0.01$ , respectively). PS analyses including the SCAS and paranoia item were therefore repeated using a parametric partial correlation controlling for gender. No other associations with demographic variables were found ( $Rho$  values  $< 0.3$ ;  $t$  values  $< 2.0$ ;  $\chi^2$  values  $< 2.5$ ;  $p$  values  $> 0.05$ ).

### *Suitability of the BCSS for use with children*

Consistent with focus group feedback, children appeared to understand the BCSS, and were able to rate items consistently. Scale descriptives are shown in Table 2. Internal reliability of each subscale was good (PS:  $\alpha=0.8$ ; NS:  $\alpha=0.7$ ; PO:  $\alpha=0.8$ ; NO:  $\alpha=0.9$ ). Item-total comparisons indicated that reliability would not be improved by removal of any items. Internal reliability for endorsement rates was similar (PS:  $\alpha=0.7$ ; NS:  $\alpha=0.7$ ; PO:  $\alpha=0.8$ ; NO:  $\alpha=0.8$ ).

Means tended to be higher for all subscales compared to the adult student standardization sample ((9); Mean age 23.6 years, SD 6.5; Table 2), but were similar for negative views of the self.

*Hypothesis 1: Negative schematic beliefs will be associated with higher levels of internalising problems (anxiety and depression)*

Depression was strongly associated with more negative beliefs and less positive beliefs about the self and others, with medium effect sizes (48). Anxiety was associated with NS and NO with small to medium effect sizes, and weakly with lack of positive beliefs (Table 3). A partial correlation controlling for gender in the association of anxiety with PS yielded a similar, non-significant result ( $r=-0.1$ ,  $df=63$ ,  $p=0.2$ ) to the non-parametric analysis reported in Table 3.

*Hypothesis 2: Negative schematic beliefs will be associated with higher levels of externalising problems*

SDQ externalising scores were significantly positively correlated with more negative views of the self and others, and significantly inversely correlated with positive beliefs about the self and others. Effect sizes were medium ((48); Table 3).

*Hypothesis 3: Negative schematic beliefs will be associated with higher levels of distressing unusual experiences*

Total UED severity was associated with NO, with a trend association with NS (Table 3). All associations were in the direction of more negative beliefs being associated with higher UED severity. Only NO differed significantly between UED groups ( $t=-2.2$ ,  $df=64.4$ ,  $p=0.03$ ), with a trend towards significance for NS ( $t=-1.6$ ,  $df=64.5$ ,  $p=0.06$ , Table 4).

*Exploratory analysis: associations of the BCSS with UED type*

A distinct pattern of variation in associations with the BCSS by unusual experience type was found. Endorsement rates and mean scores for each item are shown in Table 5, together with the association of each item with the BCSS subscales. Voices and visions were associated with lower PS and PO scores, thought phenomena with higher NS and NO scores. Paranoia was weakly associated with NO, and the grandiose item (having special powers) was not related to schematic beliefs (Table 5). The association of PS with paranoia remained non-significant when controlling for gender ( $r=-0.1$ ,  $df=64$ ,  $p=0.6$ ).

## **Discussion**

Schematic beliefs have been little examined in children. Given their importance in a range of adult psychopathology, and, particularly the hypothesized role of negative schematic beliefs in the development and maintenance of psychosis in adults (6,7) this study was designed to investigate both the measurement of schematic beliefs in a group of clinically referred youth; and the role of such beliefs in children with unusual experiences that are distressing or have an adverse life impact. In particular, we considered whether the known associations of

negative schematic beliefs with adult psychopathology were replicated in our group of clinically referred young people.

The first aim of the study was to conduct a preliminary examination of the suitability for use with children of the Brief Core Schema Scales, a measure designed originally to assess both negative and positive schematic beliefs in adults with psychosis. The BCSS was considered acceptable by our focus groups of adolescents and parental carers following minor modifications to content and presentation order. Participants were readily able to complete the adapted measure, with little missing data. The scales showed good internal consistency and reliability in our small sample, comparable to that reported in the adult validation studies (9). Supportive evidence was found for the discriminant validity of the negative beliefs about others subscale, which differentiated young people with UEDs from those without. A trend was found for children with UEDs to hold more negative beliefs about themselves than children without UEDs. Scores were comparable to those in the original BCSS validation study (9), but with some differences. Specifically, our participants tended to rate all items more highly, with the exception of negative beliefs about self. This may reflect processes of schema development, although, within our sample, age was only significantly associated with positive beliefs about others, such that older children reported progressively less positive views of others. Negative beliefs about the self were uncommon, and, even when endorsed, tended not to be rated highly for conviction. It is possible that these schemas form only in particularly adverse contexts, and, once formed, are less likely to change compared to other beliefs that appear to moderate by adulthood. Gender had a trend effect on BCSS ratings, which, although not of great magnitude, manifested as a tendency for girls to report more negative beliefs than boys on all scales. The findings suggest that age and gender should be

considered when the scales are used with young people. However, no variation was observed according to ethnic background or intellectual ability.

The study was also designed to characterise the schematic beliefs of our group of clinically referred children with emotional and behavioural difficulties, and their associations with a range of childhood psychopathology. As hypothesised, negative schematic beliefs were associated with internalising and externalising problems and UED severity. Associations of the BCSS with affective disturbance and childhood psychopathology are consistent with the literature (e.g. 27) and those with UEDs are comparable to associations reported in adult psychosis (9,12,13). The association of negative schematic beliefs with both internalising and externalising problems mirrors the associations with unusual experiences reported by Laurens and colleagues, and a recent survey of childhood mistrust (30,49,50). Findings are consistent with the role of schematic beliefs as mediators between childhood experience and later emotional and behavioural difficulties.

An exploratory aim of this study was to investigate the associations between negative schematic beliefs and UED type. These showed some similarities to associations in adult psychosis of negative views of the self with hallucinations (10), implicating emotional disturbance and self-esteem in their development and maintenance, and the absence of associations between schematic beliefs and grandiosity (7). However, in our sample, paranoia was only weakly associated with negative beliefs about others, and not with negative beliefs about the self, while thought phenomena, which have not been a particular focus of interest in adult studies, were associated with negative beliefs about the self and others. These differences may be attributable to the restricted range of scores and small sample size, rather than markedly different underlying processes compared to adult studies. Nevertheless,



associations suggest that some differentiation of approach may be helpful when working therapeutically with young people with UEDs. In particular, young people experiencing hallucinations may benefit from work to promote a more positive self-view.

### *Implications*

The findings indicate that the BCSS is suitable for use with clinically-referred children as young as 8 years. Psychometric properties are good, and the pattern of associations with both internalising and externalising psychopathology and UEDs is consistent with findings in adults, and the emerging literature in children. Findings support the hypothesised role of schematic beliefs in maintaining emotional and behavioural disorders (27,28). Importantly, the findings also evidence an association of negative schematic beliefs with UED severity, potentially implicating them in the development of a trajectory towards increasing psychosis risk, and identifying them as important treatment targets, which may be differentially addressed, depending on the type of unusual experience. Only negative beliefs about others were associated with the overall presence and severity of UEDs: targeting these beliefs may therefore prevent the development of distressing experiences. Levels of negative beliefs about the self were generally low, suggesting that this is a less common vulnerability and maintaining factor for UEDs at this developmental stage. However, the similarities in NS scores between our sample and the adult sample, and the prominent role of low self-esteem in adult psychosis, suggest that, when present, negative self-beliefs may be a particularly important therapeutic focus. Interventions for young people with UEDs should therefore include schema-change work, collaboratively considering how such beliefs arise, how they are maintained, their influence on day-to-day functioning, alternative beliefs, and the costs and benefits of change. Preventative interventions focused on key interpersonal interactions (e.g. with the family and at school) hypothesised to drive the development of negative self-

beliefs, may also have a role in reducing future risk, by modifying communication and behaviour to promote a more resilient and positive self-image.

### *Limitations*

The cross-sectional design of the study precludes causal inferences. However, the findings justify future longitudinal research to investigate causal associations. The sample is small, and multiple tests were carried out without correction to significance levels. Moreover, the sample comprised clinically-referred young people who were participating in a larger research study. Although correlation sizes suggest meaningful associations, findings should be considered preliminary, and specific to our sample, pending wider replication. In particular, suitability of the BCSS for a general population sample has yet to be tested, and, given the low levels of negative beliefs in the context of emotional and behavioural difficulties, the range of scores in a community sample might be too restricted for the scales to have predictive value in this setting. The study would have been improved by comparison to a non-clinical control group. Our slight amendments to the BCSS may have affected responses. Nevertheless, descriptive and reliability statistics indicated good internal consistency and reliability within this sample. We did not, in this study, investigate the role of life events or other social factors in schema development, nor did we consider mediating roles of schema and emotion in the association with UEDs and these are important areas for future research, that may also explain some of the differences between our sample and the adult student standardization sample.

### *Conclusions*

This is the first study to investigate schematic beliefs in children with UEDs. Findings indicate that childhood schematic beliefs can be measured using the Brief Core Schema

Scales; that such beliefs are associated with the severity of both childhood psychopathology and UEDs; and that associations differ with UED type. The study highlights the importance of negative schematic beliefs as potential treatment targets in designing cognitive behavioural interventions for young people with distressing unusual experiences. Future research should focus on the factors influencing schema development in the group, and their role in mediating change.

**Funding:**

We gratefully acknowledge financial support from Guy's & St Thomas' Charity (ref. R100417). EK, KRL and CH are partly supported by and/or affiliated with, the National Institute for Health Research Specialist Biomedical Research Centre (BRC) for Mental Health at the South London and Maudsley National Health Service Foundation Trust and Institute of Psychiatry, King's College London, United Kingdom. KRL was supported in part by a National Institute of Health Research Career Development Fellowship (CDF/08/01/015).

**Acknowledgements:**

We thank all participating children, parents, and community staff.

**Conflict of Interest:** None.

1. Young JE, Klosko JS, Weishaar ME. Schema therapy: A practitioner's guide. New York: Guilford Press. 2003.
2. Beck A T, Rush AJ, Shaw BF, Emery G. Cognitive Therapy of Depression. New York: Guilford Press. 1979.
3. Bortolon C, Capdevielle D, Boulenger JP, Gely-Nargeot MC, Raffard S. Early maladaptive schemas predict positive symptomatology in schizophrenia: A cross-sectional study. *Psychiat Res*. 2013;209(3):361-6.
4. Taylor HE, Stewart SLK, Dunn G, Parker S, Fowler D, Morrison AP. Core Schemas across the Continuum of Psychosis: A Comparison of Clinical and Non-Clinical Groups. *Behav Cogn Psychoth* doi: 10.1017/S1352465813000593
5. Stowkowy J, Addington J. (2012). Maladaptive schemas as a mediator between social defeat and positive symptoms in young people at clinical high risk for psychosis. *Early Interv Psychiatry*. 2012;6(1):87-90.
6. Garety PA, Bebbington P, Fowler D, Freeman D, Kuipers E. Implications for neurobiological research of cognitive models of psychosis: a theoretical paper. *Psychol Med*. 2007; 37(10):1377-91.
7. Garety PA, Gittins M, Jolley S, Bebbington P, Dunn G, Kuipers E, Fowler D, Freeman D. Differences in Cognitive and Emotional Processes Between Persecutory and Grandiose Delusions. *Schizophrenia Bull*. 2013;39(3): 629-639.

8. Birchwood M, Gilbert P, Gilbert J, Trower P, Meaden A, Hay J, Murray E, Miles JN. Interpersonal and role-related schema influence the relationship with the dominant 'voice' in schizophrenia: A comparison of three models. *Psychol Med.* 2004;34(8):1571-1580.
9. Fowler D, Freeman D, Smith B, Kuipers E, Bebbington P, Bashforth H, Dunn G. The Brief Core Schema Scales (BCSS): psychometric properties and associations with paranoia and grandiosity in non-clinical and psychosis samples. *Psychol Med.* 2006;36(6):749-760.
10. Smith B, Fowler DG, Freeman D, Bebbington P, Bashforth H, Garety P, Dunn G, Kuipers E. Emotion and psychosis: links between depression, self-esteem, negative schematic beliefs and delusions and hallucinations. *Schizophr Res.* 2006;86(1):181-188.
11. Barrowclough C, Tarrier N, Humphreys L, Ward J, Gregg L, Andrews B. Self-esteem in schizophrenia: relationships between self-evaluation, family attitudes, and symptomatology. *J Abnorm Psychol.* 2003;112(1):92-9.
12. Addington J, Tran L. Using the brief core schema scales with individuals at clinical high risk of psychosis. *Behav Cogn Psychoth.* 2009;37(2):227-231.
13. Fowler D, Hodgekins J, Garety P, Freeman D, Kuipers E, Dunn G, Smith B, Bebbington PE. Negative cognition, depressed mood, and paranoia: a longitudinal pathway analysis using structural equation modeling. *Schizophrenia Bull.* 2012;38(5):1063-73.

14. Freeman D, Fowler D. Routes to psychotic symptoms: trauma, anxiety and psychosis-like experiences. *Psychiat Res.* 2009;169(2):107-112.
15. Thomas N, Farhall J, Shawyer F. Beliefs about Voices and Schemas about Self and Others in Psychosis. *Behav Cogn Psychoth*  
doi:<http://dx.doi.org/10.1017/S1352465813000817>
16. Fisher HL, Appiah-Kusi E, Grant C. Anxiety and negative self-schemas mediate the association between childhood maltreatment and paranoia. *Psychiat Res.* 2012;196(2):323-324.
17. Gracie A, Freeman D, Green S, Garety PA, Kuipers E, Hardy A, Ray K, Dunn G, Bebbington P, Fowler D. The association between traumatic experience, paranoia and hallucinations: a test of the predictions of psychological models. *Acta Psychiat Scand.* 2007;116(4):280-289.
18. Barrowclough C, Haddock G, Lobban F, Jones S, Siddle R, Roberts C, Gregg L. Group cognitive-behavioural therapy for schizophrenia Randomised controlled trial. *Brit J Psychiat.* 2006;189(6):527-532.
19. Hodgekins J, Fowler D. CBT and recovery from psychosis in the ISREP trial: mediating effects of hope and positive beliefs on activity. *Psychiatr Serv.* 2010;61(3):321-324.
20. Hall PL, Tarrier N. The cognitive-behavioural treatment of low self-esteem in psychotic patients: a pilot study. *Behav Res Ther.* 2003;41(3):317-332.

21. Chung YC, Kim HM, Lee KH, Zhao T, Huang GB, Park TW, Yang JC. Clinical characteristics of patients who have recovered from schizophrenia: the role of empathy and positive-self schema. *Early Interv Psychiatry*. 2013;7(2):138-45.
22. Piaget J, Inhelder B. *Memory and Intelligence*. Paris: Presses Universitaires de France. 1973.
23. Muris P. Maladaptive schemas in non-clinical adolescents: relations to perceived parental rearing behaviours, Big Five personality factors and psychopathological symptoms. *Clin Psychol Psychot*. 2006;13(6): 405-413.
24. Van Vlierberghe L, Braet C, Bosmans G, Rosseel Y, Bögels S. Maladaptive schemas and psychopathology in adolescence: On the utility of young's schema theory in youth. *Cognitive Ther Res*. 2010;34(4):316-332.
25. Roelofs J, Lee C, Ruijten T, Lobbestael J. The mediating role of early maladaptive schemas in the relation between quality of attachment relationships and symptoms of depression in adolescents. *Behav Cogn Psychoth*. 2011;39(4):471-9.
26. Roelofs J, Onckels L, Muris P. Attachment Quality and Psychopathological Symptoms in Clinically Referred Adolescents: The Mediating Role of Early Maladaptive Schema. *J Child Fam Stud*. 2013;22(3): 377-85.



27. Stallard P, Simpson N, Anderson S, Carter T, Osborn C, Bush S. An evaluation of the FRIENDS programme: a cognitive behaviour therapy intervention to promote emotional resilience. *Arch Dis Child*. 2005;90(10):1016-9.
28. Stallard P, Simpson N, Anderson S, Goddard M. The FRIENDS emotional health prevention programme: 12 month follow-up of a universal UK school based trial.. *Eur Child Adoles Psy*. 2008;17(5):283-289.
29. Laurens KR, Hodgins S, Taylor EA, Murray RM. Is earlier intervention for schizophrenia possible? Identifying antecedents of schizophrenia in children aged 9–12 years. . In: David AS, McGuffin P, Kapur S, editors. *Schizophrenia: the final frontier*. London: Psychology Press. 2011.
30. Laurens KR, Hobbs MJ, Sunderland M, Green MJ, Mould GL. Psychotic-like experiences in a community sample of 8000 children aged 9 to 11 years: an item response theory analysis. *Psychol Med*. 2012;42(7):1495-1506.
31. Fisher HL, Caspi A, Poulton R, Meier MH, Houts R, Harrington H, Arseneault L, Moffitt TE. Specificity of childhood psychotic symptoms for predicting schizophrenia by 38 years of age: a birth cohort study. *Psychol Med*. 2013;43(10):2077-86.
32. Kelleher I, Keeley H, Corcoran P, Lynch F, Fitzpatrick C, Devlin N, Molloy C, Roddy S, Clarke MC, Harley M, Arseneault L, Wasserman C, Carli V, Sarchiapone M, Hoven C, Wasserman D, Cannon M. Clinicopathological significance of psychotic experiences in non-psychotic young people: evidence from four population-based studies. *Brit J Psychiat*. 2012;201(1):26-32.

33. Murray GK, Jones PB. Psychotic symptoms in young people without psychotic illness: mechanisms and meaning. *Brit J Psychiat*. 2012;201(1):4-6.
34. Lin A, Wigman J, Nelson B, Vollebergh W, Van Os J, Baksheev G., Ryan G, Raaijmakers QA, Thompson A, Yung A. The relationship between coping and subclinical psychotic experiences in adolescents from the general population—a longitudinal study. *Psychol Med*. 2011;41(12):2535-46.
35. Wigman J, Van Winkel R, Raaijmakers Q, Ormel J, Verhulst F, Reijneveld S, van Os J, Vollebergh W. Evidence for a persistent, environment-dependent and deteriorating subtype of subclinical psychotic experiences: a 6-year longitudinal general population study. *Psychol Med*. 2011;41(11):2317-2329.
36. National Institute for Health & Care Excellence. Psychosis and schizophrenia in children and young people (CG155). London: National Institute for Health & Care Excellence. 2013.
37. Ames CS, Jolley S, Laurens KR, Maddox L, Corrigall R, Browning S, Hirsch CR, Hassanali N, Bracegirdle K, Kuipers E. Modelling psychosocial influences on the distress and impairment caused by psychotic-like experiences in children and adolescents. *Eur Child Adoles Psy* doi:10.1007/s00787-013-0500-0
38. Dunn L, Dunn L, Whetton C, Burley J. The British Picture Vocabulary Scale. Windsor: NFER-Nelson. 1997.

39. Messer C, Angold A, Costello EJ, Loeber R, van Kammen W, Messer SC, Stouthamer-Loeber M. The development of a short questionnaire for use in epidemiological studies of depression in children and adolescents. *Int J Method Psy.* 1995;5: 237 - 249.
40. Spence SH, Barrett PM, Turner CM. Psychometric properties of the Spence Children's Anxiety Scale with young adolescents. *J Anxiety Disord.* 2003;17(6):605-625.
41. Goodman R, Meltzer H, Bailey V. The Strengths and Difficulties Questionnaire: a pilot study on the validity of the self-report version. *Eur Child Adoles Psy.* 1998;7(3):125-130.
42. Goodman A, Lamping DL, Ploubidis GB. When to use broader internalising and externalising subscales instead of the hypothesised five subscales on the Strengths and Difficulties Questionnaire (SDQ): data from British parents, teachers and children. *J Abnorm Child Psych.* 2010;38(8):1179-1191.
43. Goodman R. Psychometric properties of the strengths and difficulties questionnaire. *J Am Acad Child Psy.* 2001;40(11):1337-1345.
44. Muris P, Meesters C, Eijkelenboom A, Vincken M. The self-report version of the Strengths and Difficulties Questionnaire: its psychometric properties in 8- to 13-year-old non-clinical children. *Brit J Clin Psychol.* 2004;43(4): 437-48.

45. Laurens KR, Hodgins S, Maughan B, Murray RM, Rutter ML, Taylor EA. Community screening for psychotic-like experiences and other putative antecedents of schizophrenia in children aged 9–12 years. *Schizophr Res.* 2007;90(1):130-146.
46. Kelleher I, Harley M, Murtagh A, Cannon M. Are screening instruments valid for psychotic-like experiences? A validation study of screening questions for psychotic-like experiences using in-depth clinical interview. *Schizophrenia Bull.* 2011;37(2):362-9.
47. IBM Corp. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp. 2011.
48. Cohen J. A power primer. *Psychol Bull.* 1992;112(1):155-9.
49. Downs JM, Cullen AE, Barragan M, Laurens KR. Persisting psychotic-like experiences are associated with both externalising and internalising psychopathology in a longitudinal general population child cohort. *Schizophr Res.* 2013;144(1-3):99-104.
50. Wong KW, Freeman D, Hughes C. Suspicious young minds: paranoia and mistrust in 8- to 14-year-olds in the UK and Hong Kong. *Brit J Psychiat* doi: 10.1192/bjp.bp.113.135467

**Table 1: Demographic and clinical characteristics of the sample (n=67)**

<i>Variable (Possible range)</i>	<i>Mean (SD)</i>	<i>Range</i>
Age in years (8-14)	11.5 (1.9)	8.2-14.9
BPVS <sup>1</sup> (<50->150)	91.1 (16.2)	56-132
Depression <sup>a</sup> (SMFQ, Range 0-26)	7.9 (6.1)	0-23
Anxiety <sup>b</sup> (SCAS, Range 0-114 )	33.8 (18.1)	0-80
SDQ externalizing <sup>1</sup> (Range 0-20)	7.7 (3.8)	0-16
<i>Ethnicity</i>	<i>n (%)</i>	
Black/minority ethnic (BME)	33 (49%)	
White British/Irish (not BME)	31 (46%)	
Preferred not to respond	3 (4%)	

*Key: SD: Standard deviation; BPVS: British Picture Vocabulary Scale Standardised score; SMFQ: Short Mood and Feelings Questionnaire; SCAS: Spence Children's Anxiety Scale; SDQ: Strengths & Difficulties Questionnaire; <sup>a</sup>n=65; <sup>b</sup>n=66.*

**Table 2: Scores on the Brief Core Schema Scales (BCSS, n=67)**

<i>BCSS subscale</i>				
<i>Subscale means</i> (Range 0-24)	<i>Positive Self</i>	<i>Negative Self</i>	<i>Positive Other</i>	<i>Negative Other</i>
Mean (SD)	13.7 (5.9)	3.1 (3.7)	13.6 (5.5)	8.0 (6.3)
NC Mean <sup>a</sup> (SD)	10.2 (4.2)	3.5 (3.5)	10.4 (4.5)	4.0 (4.0)
Median	14.0	2.0	14.0	7.0
Obtained Range	0-24	0-15	1-24	0-23
Mode; n (%)	15, 17; 6 (9%)	0; 23 (34%)	14; 7 (10%)	0; 8 (12%)
<i>Endorsement rates</i> (Range 0-6)				
Mean (SD)	4.9 (1.5)	1.5 (1.6)	5.2 (1.4)	3.6 (2.1)
Median	6.0	1.0	6.0	4.0
Obtained Range	0-6	0-6	1-6	0-6
Mode; n (%)	6; 37 (55%)	0; 23 (34%)	6; 42 (63%)	6; 17 (25%)

*Key: SD: Standard deviation; BCSS: Brief Core Schema Scales ("from Fowler et al., 2006 [9]);*

**Table 3: Spearman rank correlations showing the association of the Brief Core Schema Scales with internalising and externalising problems and distressing unusual experiences**

<i>BCSS subscale</i>					
	n	<i>Positive Self</i>	<i>Negative Self</i>	<i>Positive Other</i>	<i>Negative Other</i>
<i>Depression (SMFQ)</i>	65	-0.3 p=0.006	0.5 p<0.001	-0.3 p=0.01	0.4 p=0.002
<i>Anxiety (SCAS)</i>	66	-0.2 p=0.1	0.4 p=0.001	-0.2 p=0.2	0.3 p=0.008
<i>Externalizing (SDQ)</i>	65	-0.4 p=0.003	0.4 p=0.001	-0.3 p=0.01	0.5 p<0.001
<i>UED total</i>	67	-0.2 p=0.2	0.2 p=0.09	-0.2 p=0.2	0.3 p=0.02

*Key: BCSS: Brief Core Schema Scales; Depression: Short Mood and Feelings Questionnaire (SMFQ); Anxiety: Spence Children's Anxiety Scale (SCAS); Externalising: Strengths & Difficulties Questionnaire, Externalising subscale (SDQ); UED: Distressing unusual experiences.*

**Table 4: Mean Brief Core Schema Scales scores for young people with and without distressing unusual experiences (n=67) compared to a standardisation sample.**

	<i>BCSS subscale Mean (SD)</i>				
	<i>n</i>	<i>Positive Self</i>	<i>Negative Self</i>	<i>Positive Other</i>	<i>Negative Other</i>
<i>Current study</i>					
<i>UED</i>	42	13.5 (6.3)	3.7 (4.3)	12.9 (5.8)	9.2 (7.0)
<i>No UED</i>	25	13.9 (5.3)	2.1 (2.3)	14.8 (4.8)	6.0 (4.5)
<i>Standardisation study<sup>a</sup></i>					
<i>Psychosis</i>	252	10.3 (6.4)	7.2 (5.9)	10.3 (6.0)	9.1 (6.8)
<i>Non-clinical</i>	754	10.2 (4.2)	3.5 (3.5)	10.4 (4.5)	4.0 (4.0)

*Key: SD: Standard deviation; BCSS: Brief Core Schema Scales (<sup>a</sup>Fowler et al., 2006 [9]); UED: Distressing unusual experiences.*



**Table 5: Associations of the Brief Core Schema Scales with distressing unusual experiences (n=67)**

<i>UED item (Range 0-11)</i>	<i>UED item severity</i>			<i>BCSS subscale (Spearman rank correlation)</i>			
	<i>n (%)</i>	<i>Range</i>	<i>Mean (SD)</i>	<i>Positive Self</i>	<i>Negative Self</i>	<i>Positive Other</i>	<i>Negative Other</i>
<i>Some people believe that their thoughts can be read. Have other people ever read your thoughts?</i>	14 (21%)	0-11	1.0 (2.2)	-	0.2 p=0.04	-	0.4 p=0.002
<i>Have you ever believed that you were being sent special messages through the television?</i>	7 (10%)	0-10	0.5 (1.8)	-	-	-0.2 p=0.06	-
<i>Have you ever thought that you were being followed or spied upon?</i>	26 (39%)	0-11	2.1 (3.0)	-	-	-	0.2 p=0.096
<i>Have you ever heard voices that other people could not hear?</i>	21 (31%)	0-11	2.0 (3.2)	-0.3 p=0.03	-	-	-
<i>Have you ever felt that you were under the control of some special power?</i>	13 (19%)	0-11	1.3 (2.7)	-	-	-	0.2 p=0.06
<i>Have you ever known what another person was thinking even though that person wasn't speaking?</i>	15 (22%)	0-8	1.2 (2.4)	-	0.2 p=0.08	-	0.2 p=0.05
<i>Have you ever felt as though your body had been changed in some way that you could not understand?</i>	9 (13%)	0-7	0.6 (1.7)	-	-	-	-
<i>Do you have any special powers that other people don't have?</i>	12 (18%)	0-10	0.9 (2.2)	-	-	-	-
<i>Have you ever seen something or someone that other people could not see?</i>	20 (30%)	0-10	1.9 (3.3)	-0.2 p=0.05	-	-	-

Key: UED: Distressing unusual experiences; BCSS: Brief Core Schema Scales. Only associations  $\geq 0.2$  or with  $p$  value  $< 0.1$  are reported; for all other associations Rho values  $< 0.2$ ,  $p$  values  $> 0.1$ .